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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Stephen G. Bales

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EXAMINER

DANIELS, MATTHEW J

ART UNIT

PAPER NUMBER

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/681,497	Applicant(s) BALES, STEPHEN G.	
	Examiner MATTHEW J. DANIELS	Art Unit 1791	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 March 2010.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,3-6,8-10,12,14,16 and 18-21 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 16 is/are allowed.
- 6) ☒ Claim(s) 1,3-6,8-10,12,14 and 18-21 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>3/22/10</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

1. **Claim 21** is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The range of “at least 25%” HDPE contradicts the 25-75% in Claim 16.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. In view of the multiple species claimed (zinc borate, boric acid, colemanite, different polymeric materials) and the differing scope of Claims 1 and 18, multiple rejections were required.
3. **Claims 1, 3-6, 8-10, 12, and 19** are rejected under 35 U.S.C. 103(a) as being unpatentable over Touval (USPN 3926883) in view of Wold (US 5,435,954). **As to Claim 1**, Touval teaches forming a polyolefin (2:11) thermoplastic product which comprises incorporating an amount of boron containing material which inherently acts as a fungicide in an amount between 2-12% of the article (7:30-60). Touval appears to be silent to the lignocellulosic

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material and the particular claimed amount of polyolefin, however, such composites are conventional and well known to those skilled in the art. See Wold, who teaches that the proportion of wood filler in the polyolefin may be 55-70% by weight (cols. 17-18).

It would have been prima facie obvious to one of ordinary skill in the art at the time of the invention to incorporate the method of Wold, the method comprising incorporation of lignocellulosic filler, into that of Touval because (a) the use of a cellulosic filler in a plastic material is a known improvement taught by Wold providing the predictable result that the plastic material is reinforced and less plastic is used as a result of the incorporation of cellulosic filler, and one of ordinary skill in the art could have easily applied this known improvement to similar processes such as that of Touval which already contain plastic material to provide the same benefits (reinforcement, less plastic used) to the Touval process.

As to Claims 3-6, 8-10, and 12, Touval teaches polyethylene (2:10-11) which is a thermoplastic, and colemanite (Table 1, column 7, colemanite is a naturally occurring calcium borate) used in an amount of 3-5% (Table 1, samples 7-8), which would inherently provide the claimed degree of resistance to visual impairment. Additionally, the amount of colemanite is clearly a result effective variable that one would optimize to arrive at the claimed range which is not substantially different than the amounts disclosed by Touval in Col. 7. Wold clearly suggests pine (table in Col. 16) as one possible filler material. **As to Claim 19,** see 55-70% in the table in cols. 17-18 of Wold and disclosure of 60% by volume at 13:5-15.

4. **Claims 1, 3-5, 10, 14, and 19** are rejected under 35 U.S.C. 103(a) as being unpatentable over Wold (US 5,435,954) in view of Borogard ZB (of record, 3/20/08 IDS). The Borogard ZB

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date is July 26, 1993. **As to Claims 1 and 14**, Wold teaches a material that consists of plastic (HDPE), wood flakes, and a coupler, in weight fractions of 55-70% wood flakes, 30-31% HDPE, and 3% coupler (cols. 17-18), formed into a composite. In the alternative, one would have found it obvious to optimize the amount of plastic in the Wold composite through routine experimentation since the plastic material provides the recognized result that it acts as the binder for the wood material. Wold is silent to the zinc borate and its amount.

However, Borogard ZB teaches incorporation of zinc borate at a loading of 3-20 parts or 0.5 to 8% for use as a biocide and fire retardant (phrase below title, also Plastic and Rubber Products and Wood Composite Materials section on Page 2 of 3). This quantity reads on the claimed amount of zinc borate.

It would have been prima facie obvious to one of ordinary skill in the art at the time of the invention to incorporate the method of Borogard ZB into that of Wold because (1) Wold provides a mixture of plastic and wood, and Borogard ZB expressly suggests the zinc borate for use with PVC, plastics, and wood composite materials, and/or (2) the zinc borate of Borogard ZB would act as a flame retardant (cols. 7 and 8), which would be desirable to one using the Wold process for providing the obvious benefit of flame retardant.

As to Claim 3, Borogard ZB teaches zinc borate and suggests that it be incorporated into plastics and wood composites in the claimed amount (Page 2 of 3). **As to Claims 4, 5, and 10**, Wold clearly suggests wood, polyethylene and HDPE (cols. 17-18 and elsewhere). **As to Claim 19**, see 55-70% in the table in cols. 17-18 of Wold and disclosure of 60% by volume at 13:5-15.

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5. **Claims 1, 3-5, 6, 8-10, 12, 18-20** are rejected under 35 U.S.C. 103(a) as being unpatentable over Wold (US 5,435,954) in view of Lloyd (USPN 6368529). **As to Claims 1, 3-5, 6, 8-10, 12, and 18**, Wold teaches a material that consists of plastic (HDPE), wood flakes, and a coupler (13:5-15). In one embodiment, Wold suggests 60% by volume wood flakes, but elsewhere suggests that the weight fraction of wood can be 55-70% (cols. 17-18). In the alternative, one would have found it obvious to optimize the amount of plastic in the Wold composite through routine experimentation since the plastic content provides the recognized result that it acts as the binder for the wood material. Wold forms the material into a composite. Wold is silent to the calcium borate (or cationic salt of boric acid) and its amount.

However, Lloyd teaches the claimed amount (4%) of calcium borate in the form of colemanite incorporated into a composite material (3:45-62).

It would have been prima facie obvious to one of ordinary skill in the art at the time of the invention to incorporate the method of Lloyd into that of Wold because (1) Wold provides a material which includes wood or other lignocellulosic materials and Lloyd teaches that calcium borate may be used as a pesticide against fungi and insects that destroy wood, thus it would have been obvious to apply the improvement of Lloyd to the material of Wold, with the expected result that the same fungi and insect resistance would be provided to the Wold material. **As to Claims 19 and 20**, Wold clearly suggests that wood may be about 60% of the composite (13:5-15 and cols. 17-18).

Allowable Subject Matter

6. **Claim 16** is allowed.

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7. The following is an examiner's statement of reasons for allowance: the prior art does not teach or fairly suggest the particular mixture recited in Claim 16 including talc and mica. The claimed mixture must contain 25-75% polyolefin, a lignocellulosic material, talc, and mica. It may optionally contain one or more of the additional components (lubricant, cross-linking agent, UV stabilizer, inhibitor, and a coupling agent). The phrase "such as...mold attack" is interpreted to be an intended effect produced as a result of using the claimed mixture, and not a separate limitation on the claim. The portion of the claim preceding "the improvement which consists of" is not interpreted as Jepson language since it is not part of the preamble and there is no indication that it is the work of another.

8. Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Response to Arguments

9. Applicant's arguments filed 22 March 2010 have been fully considered, but are not persuasive. The arguments appear to be on the following grounds:

a) General Argument I – calcium borates are poor flame retardants and would have to be loaded in large quantities for a composite material.

b) General Argument II - zinc borate is a much more effective flame retardant than colemanite, and one would not have been motivated to use colemanite as a replacement.

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c) There was no need to protect wood from decay at the time of the invention. 1% zinc borate was all that was needed to protect materials.

d) There was a long felt need for resistance to mold growth in wood plastic composites.

e) Touval requires stannic oxide, and provides 3-5% colemanite only for use in PVC.

Use of this amount in polyolefins would not result in the desired flame retardancy.

f) One would not have been motivated to incorporate more than 1% zinc borate in a wood plastic composite since that was all that was needed to protect wood.

g) Calcium borate has never been used as a fungicide and any attempt to use it as a flame retardant would require a much larger amount. Such a large loading would not allow for a wood content above 40%.

10. These arguments are not persuasive for the following reasons:

a,b,e) Even if calcium borates are poor flame retardants and other flame retardants (zinc borate) are known, Touval suggests the claimed amounts in non-control (or non-comparative) examples. The instant claims do not exclude stannic oxide (or any other components) used in Touval's process with the colemanite. While slightly higher amounts are suggested for polyethylene than halogen-containing plastics (Touval, col. 2), the 4 phr used for the polyethylenes (2:31-34) appears to overlap with the claimed range.

c,f) The claimed amount is clearly within the range suggested by the Borogard ZB reference. The fact that Applicant has recognized another benefit flowing naturally from the teaching of the prior art is not usually a basis for patentably distinguishing a reference from the prior art.

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d) Assertions such as long felt need are typically made by way of declarations under 37 CFR 1.132. Please see MPEP 716.04 for a list of factors that should be considered when asserting a long felt need. In this case, Claim 1 is broad enough to encompass zinc borates, and the Borogard ZB reference illustrates that this is a conventional additive. If Applicant intends to maintain that there is a long felt need, one pertinent factor to be considered in this case would be the presence of a material which may have been provided for a different reason, but would have nevertheless provided the claimed result.

g) Touval's disclosure is contrary to this argument unless a claim limitation is found which would allow exclusion of the additional components also used by Touval.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to MATTHEW J. DANIELS whose telephone number is (571)272-2450. The examiner can normally be reached on Monday - Friday, 8:00 am - 4:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Christina Johnson can be reached on (571) 272-1176. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Matthew J. Daniels/
Primary Examiner, Art Unit 1791
6/21/10